

Preparing an Iron Coordination Complex

Name: _____

Section: _____

Date: _____

Purpose (goal of the experiment):

Experimental data:

Mass of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ used	
Mass of $\text{CH}_3\text{CO}_2\text{Na} \cdot 3\text{H}_2\text{O}$ used	
Volume of acetylacetone used	
Moles of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ used	
Moles of $\text{CH}_3\text{CO}_2\text{Na} \cdot 3\text{H}_2\text{O}$ used	
Moles of acetylacetone used	
Theoretical yield of $\text{Fe}(\text{acac})_3$	
Actual yield of $\text{Fe}(\text{acac})_3$	
Percent yield	

Show calculations:

Use the following molar masses for calculating the theoretical yield: $\text{FeCl}_3 \cdot 6\text{H}_2\text{O} = 270.30 \text{ g/mol}$, $\text{CH}_3\text{CO}_2\text{Na} \cdot 3\text{H}_2\text{O} = 136.08 \text{ g/mol}$, acetylacetone = 100.11 g/mol , $\text{Fe}(\text{acac})_3 = 353.18 \text{ g/mol}$. Density of acetylacetone is 0.976 g/mL .

Post Lab Questions

1. How would using 0.42 g $\text{CH}_3\text{CO}_2\text{Na}\cdot 3\text{H}_2\text{O}$ instead of the amount called for in the procedure change the theoretical yield of $\text{Fe}(\text{acac})_3$? Explain (show calculations if needed).
2. When checking to see if crystallization is complete, briefly explain why it is more efficient to examine a small portion of the filtrate rather than the entire solution?
3. After the recrystallization step, you are instructed to wash the collected crystals with distilled water instead of a water-methanol mixture. Briefly explain why.